Homework 4

CMSY-199, Spring 2011

The source code and sample output for this assignment must be submitted electronically using the CE6 course website prior to the start of class on Monday, April 4.

1. Add the following member variables to the `Complex` class (Fig. L 8.7) after completing Lab Exercise 3 from chapter 8.

Field	**Summary**
`I`	The complex number (0,1)
`ONE`	The complex number (1,0)
`ZERO`	The complex number (0,0)

2. Add *set* and *get* methods for the member variables `real` and `imaginary`

3. Add the following methods to the `Complex` class.

Method Name	**Return Type**	**Description**
`abs`	`double`	Return the absolute value of a Complex number (aka, modulus or magnitude)
`arg`	`double`	Return the argument of a Complex number (aka, phase or angle)
`conjugate`	`Complex`	Return the complex conjugate of a Complex number
`divide`	`Complex`	Divide two Complex numbers
`equals`	`boolean`	Returns true if the real and imaginary parts of obj and `this` are equal
`fromPolar`	`Complex`	Create a Complex number from polar form
`multiply`	`Complex`	Multiply two Complex numbers
`toPolarString`	`String`	Return String representation of a Complex number in Polar Form

4. Modify the `ComplexTest` class (Fig. L 8.8) to test all of the new members in the `Complex` class.